

- (25.) 26. Thorax red *P. gravenhorsti*, 80.
 (24.) 27. Segments 2 and 3 normal.
 (29.) 28. Petiolar area nitidulous *P. variabilis*, 88.
 (28.) 29. Petiolar area more or less rugose.
 (31.) 30. Petiolar area only centrally rugose *P. assimilis*, 89.
 (30.) 31. Petiolar area entirely rugose.
 (33.) 32. Two basal segments sharply aciculate *P. procerus*, 78.
 (32.) 33. Two basal segments not aciculate.
 (35.) 34. Segment 2 alutaceous; eyes naked *P. marshalli*, 93.
 (34.) 35. Segment 2 punctate; eyes densely pubescent *P. rotundipennis*, 100.
 (23.) 36. Area of metathorax incomplete.
 (48.) 37. Basal abdominal segment punctulate, not aciculate.
 (39.) 38. Antennæ unicolorous *ORESBIUS castaneus*, 108.
 (38.) 39. Antennæ tricoloured *MICROCRYPTUS*, 23.
 (41.) 40. Head very large, twice as broad as thorax *M. graviceps*, 49.
 (40.) 41. Head normal.
 (43.) 42. Thorax without areæ *M. nigrocinctus*, 41.
 (42.) 43. Thorax with more or less distinct areæ.
 (45.) 44. Metathorax red, with broad black central vitta *M. brachypterus*, 50.
 (44.) 45. Metathorax unicolorous.
 (47.) 46. Metathorax red *M. labralis*, 52.
 (46.) 47. Metathorax black *M. micropterus*, 51.
 (37.) 48. Basal segment more or less aciculate *HEMITELES*, 116.
 (50.) 49. Segment 2 aciculate *H. hemipterus*, 154.
 (49.) 50. Segment 2 smooth.
 (52.) 51. Scutellum red *H. subzonatus*, 140.
 (51.) 52. Scutellum black *H. pedestris*, 138.

Notes from the Wye Valley: the Vanessids in 1907.

By J. F. BIRD.

This has not been a very good season from a collector's point of view, but we have found it interesting with regard to the Vanessids. Judging from ova and larvæ of *Polygonia c-album*, found from the last day of March to the beginning of July, and larvæ of *Aglais urticae*, in June and July, the ovipositing of the hibernated females of both these species appears to have been much protracted; the cause, no doubt, being the abnormally dull and cold weather we have experienced this year; the fine "butterfly days" so few and far between.

Polygonia c-album.—Only one hibernated specimen of *P. c-album* was observed in the spring, a female, which frequented our garden on March 31st and April 1st, when I watched it ovipositing on *Ribes* (vide vol. xix., p. 125). I have already mentioned (p. 126) the length of time it took for the first two larvæ, that hatched from ova we obtained, to eat their way out from their shells, and it seems, from further observations, that about twelve hours is the average time for this operation. Perhaps the table on p. 38, showing dates of hatching, moulting, etc., of some of these will be found of interest.

I should like to have added the sex in each case, to compare with the number of keels of the ovum, but do not feel sufficiently certain that I can tell. I fancy it is easier to distinguish the sex of specimens met with in the natural state.

Emergence generally takes place in the early morning, but a few we have bred came out at other times of the day, though rarely at night.

Besides obtaining ova in April, in May we also found, on our

currant-bushes, several of the larvæ, which we left for observation and also because we wished to find a pupa *in situ* for Mr. H. Main for photographing. The larvæ live on the underside of the leaves and are very easy to discover on currant, especially during the first two instars. When one has learnt to recognise the peculiar elongate holes the young larvæ make in the leaves, a cursory glance round a bush will almost be sufficient to see if any larvæ are present. They are generally to be found on the outer leaves, a little lower than half-way down, but as they grow, they climb upwards, and, when full-fed, pupate at the top of the bush, attaching themselves by their tails to the projecting ends of twigs that have been pruned away from the stems. "Wild" larvæ on our currant-bushes, most likely progeny of the same female that laid the ova we obtained, were not so forward as those kept in confinement, and probably emerged about a fortnight later. On July 1st, before any we were rearing had emerged, or any imagines seen at large, my father found a young larva feeding on wych-elm, and on the next day I found another on the same tree, suspended for pupation to a vein on the underside, near the base and towards the edge of a leaf growing on one of the low branches. This pupated on the 3rd and emerged seventeen days later. On July 7th, I found two more on currant, not many days old, in fact, still in the first instar. As will be seen in the table, the first bred one emerged on July 6th. In the natural state, the summer brood were seen flying from July 24th until September 9th. This brood was fairly numerous, at least the males were; I only saw three I am pretty sure were females. The undersides of this species may be roughly divided into three groups, (a) light marbled, (b) dark marbled and (c) plain, almost black. According to our experience, groups a and b belong more particularly to the summer brood, while group c is the "type" of the autumn brood. It was noticed this year that the summer brood had much darker undersides than usual. Examples of groups a and b were, I think, much the rarest, group a being exceedingly scarce; while most of the specimens bred belong to group c. Of the three "wild" females seen, one, which I did not succeed in catching, had a light marbled underside, while the other two had very dark undersides. The two latter I netted and posted to Mr. Main, who wished to try for ova. He tells me that the first one, which I sent him at the beginning of August, lived a month, but did not lay a single egg. The other one, posted on September 9th was, unfortunately, lost *en route*, the box containing it being so roughly handled that the butterfly must have escaped (I am wondering if this species will be recorded in the near future in some unusual locality between Monmouthshire and Essex). On the latter date, September 9th, I noticed a good number of these butterflies about, all busily feeding at various flowers. This was the last date upon which I saw the summer brood on the wing. In consequence of the inclement weather, I fancy the number of those hibernating through the approaching winter will be considerably increased by members of the summer brood. It would be interesting to hear if anyone has ever succeeded in obtaining ova from a female of this brood belonging to group c with a plain dark underside, or do all those with such undersides hibernate, as well as the autumn brood? I believe it has been frequently stated that only specimens with plain undersides have been noticed in the spring.

	Date when egg was laid.	Date when egg was found.	No. of keels.	Date when larva hatched out.	Length of egg period.	Date of 1st moult.	Duration of 1st instar.	Date of 2nd moult.	Duration of 2nd instar.	Date of 3rd moult.	Duration of 3rd instar.	Date of 4th moult.	Duration of 4th instar.	Date when larva suspended.	Date of pupation.	Duration of 5th instar.	Length of Larval Life.	Date of emergence of imago.	Length of pupal life.	Length of time from laying of egg to emergence of imago.	Length of time from hatching of larva to emergence of imago.
1.	31. iii.		10	22 iv.	22 dys	1 v.	9 dys	10 v.	9 dys	15 v.	5 dys	27 v.	12 dys	14 vi.	16 vi.	20 dys	55 dys	8 vii.	22 dys	99 dys	73 dys
2.	1. iv.		11	23 iv.	22 "	6 v.	13 "	13 v.	7 "	18 v.	5 "	30 v.	12 "	12 vi.	14 vi.	15 "	52 "	6 vii.	22 "	96 "	74 "
3.	1. iv.		11	23 iv.	22 "	13 v.	20 "	21 v.	8 "	27 v.	6 "	5 vi.	9 "	17 vi.	19 vi.	14 "	57 "	14 vii.	25 "	104 "	82 "
4.	1. iv.		11	25 iv.	24 "	11 v.	16 "	17 v.	6 "	26 v.	9 "	3 vi.	8 "	13 vi.	15 vi.	12 "	51 "	9 vii.	24 "	99 "	75 "
5.	1. iv.		11	25 iv.	24 "	(Died)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6.	? iv.	10	23 iv.	? iv.	?	10 v.	17 dys	? v.	? dys	? v.	? dys	? v.	? dys	13 vi.	15 vi.	? dys	53 dys	9 vii.	24 dys	? dys	77 dys
7.	do.	11	26 iv.	? iv.	?	13 v.	17 "	22 v.	9 dys	30 v.	8 dys	8 vi.	9 dys	20 vi.	21 vi.	13 dys	56 "	16 vii.	25 "	? "	81 "
8.	do.	11	27 iv.	? iv.	?	13 v.	16 "	23 v.	10 "	30 v.	7 "	12 vi.	13 "	(Died)	—	—	—	—	—	—	—
9.	do.	9	29 iv.	? iv.	?	? v.	? "	? v.	? "	? v.	? "	? v.	? "	? "	14 vi.	? dys	46 dys	6 vii.	22 dys	? dys	68 dys
10.	do.	9	29 iv.	? iv.	?	? v.	? "	? v.	? "	? v.	? "	? v.	? "	12 vi.	14 vi.	? dys	46 "	7 vii.	23 "	? dys	69 "
11.	do.	10	29 iv.	? iv.	?	19 v.	20 "	28 v.	9 "	5 vi.	8 "	14 vi.	9 "	28 vi.	30 vi.	16 dys	62 "	19 vii.	19 "	? dys	81 "
12.	do.	10	30 iv.	? iv.	?	12 v.	12 "	17 v.	5 "	25 v.	8 "	4 vi.	10 "	16 vi.	18 vi.	14 "	49 "	12 vii.	24 "	? dys	73 "
13.	do.	10	30 iv.	? iv.	?	13 v.	13 "	? v.	? "	30 v.	? "	9 vi.	10 "	21 vi.	23 vi.	14 "	54 "	17 vii.	24 "	? dys	78 "
14.	do.	10	30 iv.	? iv.	?	14 v.	14 "	23 v.	9 "	30 v.	7 "	9 vi.	10 "	22 vi.	23 vi.	14 "	54 "	17 vii.	24 "	? dys	78 "

That the larvæ do not invariably pupate on the food-plant is evident. On September 1st, in the morning, I came across a larva suspended to the outer beam under the eaves of a lean-to hovel, close by the side of one of the posts supporting the roof, up which it had probably travelled. Up to midday on September 4th, it had not cast its larval skin, but, on looking later on, in the afternoon, I found it not long pupated; the integument still soft and light in colour, I have never known one take so long to pupate after suspension, but possibly the cold weather we were having at the time may account for this; the change usually occupying from 24 to 48 hours. Meanwhile, another of these larvæ had arrived on the scene and was quietly resting, three inches away from the freshly-changed pupa. Next morning, at 11 a.m., the new arrival was still unsuspected, but had spun a small cone-shaped pad of whitish silk, and was sitting in the characteristic attitude of this larva, with head curled to one side and its posterior extremity hanging downwards from the last pair of abdominal prolegs, which were clasping one on each side of the silken pad. I stood watching for some time, hoping to see it attach itself to this pad, but as it did not seem ready to oblige me, I got tired of waiting. At 2.45 p.m., I found it attached to the silk and hanging downwards; it pupated on the 7th. Neither have yet (October 14th) emerged, and although 27 days has been the longest pupal period which has, as yet, come under our notice, I think there is still a chance that one at least, the one that pupated on September 7th, may come out, as it showed signs of life on October 9th, by moving slightly. Besides these, I found two more pupæ (one dead) suspended to woodwork within the building. In a small clump of nettles, close by the shed, I discovered a pupa suspended to the base of the midrib of one of the upper full-grown leaves, and also two larvæ, which I left, to see whether they would leave their foodplant to pupate or not. When these suspended themselves, the weather had much improved, with the temperature a good deal warmer, and pupation took place much sooner than was the case with the one before mentioned. Both suspended themselves to stalks of large leaves towards the upper part of nettles, the first on September 7th, pupating on the 8th, while the other suspended itself on the 8th and had pupated on the 10th. A little larva, found on my knee on September 5th, which I must have brushed off while walking among the nettles, surprised me, on account of its small size, by pupating on the 13th of the month. We have only recorded the pupal lives of three bred this autumn, which are as follows:—

	SUSPENDED.	PUPATED.	EMERGED.	PUPAL LIFE.
1	7. ix.	8. ix.	26. ix.	18 days
2	8. ix.	10. ix.	27. ix.	17 ,,
3	12. ix.	13. ix.	1. x.	18 ,,

It has surprised me considerably, when reading up notices of this species, by various authors, that they should remark on the small flight of the first brood and the greater abundance of autumn specimens. Of course I can only claim a four years' acquaintance of this butterfly, but my experience in Monmouthshire during that time

has been exactly the opposite; I have always found the second-brood considerably less in evidence, which I have imagined might be due to their seeking their winter-quarters almost immediately after emerging from the pupa. I may add that, up to the time of writing (October 14th), I have not seen a single "wild" specimen of the second-brood this autumn.

The larvæ feed in the day-time, and, when living on *Urtica*, have a habit of eating away some of the under half of the midrib, a short distance away from the base of a leaf, which then hangs down and provides them with a sort of tent or shelter in which they rest. They do not live gregariously, but one may always hope, on finding one, to obtain several near by, even if not on the same plant or bush. Besides mentioning *Ulmus*, *Urtica* and *Ribes*, Dr. Chenu states (*Enc. d'Hist. Nat.*) that these larvæ live on "le chèvrefeuille des buissons (*Lonicera xylosteum*), et sur le noisetier commun (*Corylus avellana*)." Experimenting with these plants on a larva kept in confinement, I find that hazel is accepted, but apparently not much appreciated; honeysuckle it absolutely refused to touch. Another plant I tried was swallow, by placing the larva on the bush itself. It fed immediately, without any hesitation, eating a good large piece out of a leaf, but after its meal was very uneasy; continuing to move about from leaf to leaf, spinning webs under each, but never resting for any length of time under any of them.

Aglais urticae.—Hybernated specimens of *A. urticae* were noticed from March 21st until May 12th (In my note on the courtship of this species, vol. xix., p. 145, the date recorded there should have been May 6th and not the 16th). Notwithstanding the fact that this butterfly was unusually numerous in the spring, the nettles were, up to the end of July, remarkably free from their larvæ. Small nests were the rule and the larvæ lived more apart than is usual with this gregarious species, in leaves spun up somewhat after the fashion of *Pyrameis atalanta*: three or four were sometimes found in one shelter, but a good many were noticed living quite solitarily, even when fairly small. Newly-emerged imagines of the first brood began to appear on July 5th, and, at the same time, quite small larvæ were still to be found; indeed, caterpillars of this, the first brood, were to be met with throughout the first half of July. One larva, found on July 15th, suspended to its foodplant, changed to a wonderfully golden pupa two days later. The imagines of this brood continued on the wing until August 3rd. Larvæ, half-an-inch long, probably of the second brood, were noticed about the second week of August; they finished feeding and began to pupate in the natural state about the end of the third week, and the imagines seen on the wing from September 6th. I do not remember ever having seen the larvæ of the second-brood so plentiful before.

My brother tells me of an interesting incident witnessed by him, this autumn, in his garden at Brockweir. A specimen of *A. urticae* was feeding on a ripe fallen plum, when a wasp suddenly pounced upon it and viciously snipped off one of its wings; the butterfly shook off its opponent and tried to escape, but had only fluttered feebly a short distance, when the wasp again attacked it and soon had all the wings off. But what happened after this had been accomplished, my brother could not inform me, as he was busy directing some work he was having done in his garden.

Vanessa io.—Hybernated specimens, though common in the spring, were not so abundant as in 1906. They were observed from March 26th until June 16th. No larvæ were met with and this year's imagines were rather scarce and very late, none appearing until September 8th, more than a month later than last year.

Pyrameis cardui.—It is rather curious, considering that 1906 was decidedly a "cardui year," that this is the first season, since coming to this district in 1904, we have failed to meet with this insect.

P. atalanta.—I have not seen a single example of this butterfly this season, but heard that one was seen flying in the garden about the second week of September.

A Biological Inquiry into the Nature of Melanism in *Amphidasys betularia*, Linn. (*with plate*).

By H. S. LEIGH.

In connection with an investigation which I am making on the "melanism" of *Amphidasys betularia* with a view to elucidating, so far as is possible by experimental and statistical methods, the causes which operate in the production of melanic forms, it is intended to make an extensive enquiry as to the distribution, etc., of the typical, intermediate, and melanic forms of this species. I should be extremely grateful if entomologists would assist me in collecting the information concerning the occurrence and distribution of these forms by answering as many as possible of the subjoined questions.

1. Whether form A or form D occurs in a particular locality.

2. If both forms occur state, if possible, the actual numbers taken of each, or state which form predominates and to what extent.

3. State whether forms B or C occur and in what abundance. Give exact localities where each form occurs.

4. State the atmospheric character of the district, and whether it is rural with a smokeless atmosphere, or urban and smoky, or intermediate in character. Any other information of a general character will be very acceptable.

Replies to these queries on postcard, may be sent to H. S. Leigh, Zoological Department, The University, Manchester.

[We trust that as many lepidopterists as possible will give Mr. Leigh the desired information, and so facilitate his inquiries into this interesting subject.—ED.]

VARIATION.

THE VARIATION OF *XYLOPHASIA RUREA*.—The editorial query to my note on the breeding of *Xylophasia rurea* (*antea* p. 17) has led me to enter into rather more detail with regard to the aberrations bred. Altogether I took rather over 100 larvæ of this species, of which about 90 produced imagines, chiefly during the last week in June. Of these about one-third possessed markings like the type, the other two-thirds were more or less brown. I sent the pick of them to Mr. Hanbury, who wanted to renew his series, but, of those I put in my collection, I note the following: Three each with typical markings, but with three shades of ground colour which appear to correspond with (1) the type